**Bt: The lesson not learned**

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The more things change, the more they stay the same, as a Dec. 29 Associated Press report on genetically engineered corn notes.  Like déjà vu, this news story on emerging resistance to Bt toxin — a fabulously effective and popular insecticide to protect corn.   
  
More than a half-century ago, our magazine chronicled, the emergence of resistance to DDT, the golden child of pest controllers worldwide. Now much the same thing is happening again with Bt, its contemporary agricultural counterpart. Will we never learn?

The new AP story cites that corn genetically engineered to produce the insect-targeting Bt toxin no longer knocks out a major scourge — the Western corn rootworm — as it recently had. These beetle larvae are developing resistance to the toxin (named for its initial source, the bacterium Bacillus thuringiensis). And the worst part: Early evidence of resistance occurs in secret as the voracious larvae again chomp away at roots buried beneath a masking layer of soil.

Back in early August, Iowa State scientists published a [report](http://www.plosone.org/article/info:doi%2F10.1371%2Fjournal.pone.0022629) in PLoS ONE about rootworms able to feast on supposedly protected crops. “This is the first report of field-evolved resistance to a Bt toxin by the western corn rootworm,” Aaron Gassmann and his colleagues noted.

A few weeks later, Mike Gray of the University of Illinois [reported](http://bulletin.ipm.illinois.edu/article.php?id=1555) in the Aug. 26 issue of The Bulletin that he recently had been called in to “verify severe corn rootworm pruning on some Bt hybrids.” The concerned farmer had relied exclusively on genetically engineered Bt to protect his corn. When Gray arrived, “[rootworm] adults were numerous and easy to collect. It was also easy to find plants with two to three nodes of roots completely destroyed. A shovel was not required for removing the plants from the soil.”

This brutal pest lops off anchoring roots, after which corn stalks fall over like just so many trunks of felled timber.

**Questions**:

1. Where does the term Bt come from? (What does Bt stand for?)

2. What is happening to the western corn rootworm now that it has been exposed to Bt corn?

3. Has anything similar happened before in history?

4. How would you design an experiment to test if these western corn rootworms are resistant to Bt?